A heavy mind, a heavy body? An epidemiological study on the association between mood disorders and body weight

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Summary
Depressive and anxiety disorders are a major public health concern worldwide, causing a huge decline in quality of life for the individual and a huge economic burden for the community. Unhealthy weight (obesity and underweight), also a major public health concern is associated with disease burden for the individual and huge economic costs. Both mental disorders and unhealthy weight are associated with increased mortality and morbidity, possibly through the association with various medical diseases such as cardiovascular disease and diabetes.

The association between mental disorders and obesity has been studied frequently the past decades. Less attention has been paid to the association between mental disorders and underweight. There is evidence that mental disorders are associated with unhealthy weight status (underweight and obesity). However the nature of the association as well as the underlying mechanisms of the association has not been studied well yet. Unhealthy lifestyles are suggested to be mediating the association between mental disorders and unhealthy weight. This means that people with mental disorders gain or lose weight through the adoption of an unhealthy lifestyle.

The first aim of this thesis is to investigate the nature of the association between depressive and anxiety disorders and unhealthy weight. The second aim is to examine the influence of (un)healthy lifestyles on the association between depressive and anxiety disorders and unhealthy weight. The (un)healthy lifestyles we consider in this thesis include: sedentary behavior, physical activity and social activity. Furthermore, in this thesis we have focused on different depressive and anxiety disorders and clinical characteristics and their individual association with unhealthy weight. Knowledge derived from this thesis could be used to identify which disorders are most at risk for developing an unhealthy weight and would benefit from prevention and treatment of both conditions. In chapter 1 the theoretical background and the main aims of this thesis are given. In chapter 2 through 7 the research outcomes are presented. In chapter 8 the main conclusions are discussed in the light of the current scientific knowledge.

First, the association between mental disorders and unhealthy weight was investigated. Chapter 2 shows the results of a cross-sectional meta-analysis on the association of obesity and depression (both symptoms and disorders) in the adult population. A pooled odds ratio of these studies was calculated and showed a significant positive association between depression and obesity. Chapter 3 shows the results of a meta-analysis of longitudinal studies in the adult population, which demonstrated a significant positive bi-directional longitudinal association between depression and obesity. Which means that depression is causing obesity and vice versa.

Chapter 4 reports the data of the CSLC study of 43,543 persons in the adult population (18-90 years). The results demonstrated a U-curved association between Body Mass Index and depressive symptoms, which means that both underweight as well as obesity were associated with depression. Chapter 6 reports baseline data of the NESDA study, a cohort study of 2,981 persons aged between 18-65 years with the aim to examine the course of depressive and anxiety disorders. This study showed an association between having a major depressive disorder (MDD) and obesity, while other depressive and anxiety disorders were not associated
with obesity. Chapter 7 reports baseline and 2-year follow up data from the NESDA study. The results demonstrated that both weight gain and weight loss were associated with depressive disorders and panic disorder was associated with weight gain. Furthermore it gave evidence for a dose-response effect of severity depressive symptoms on weight gain.

Second, the role of (un)healthy lifestyles on the association between depressive and anxiety disorders and obesity were investigated. In chapter 5, the association between depressive and anxiety disorders and common sedentary behaviors were examined using baseline data of 2,323 persons from the NESDA study with a current depressive and or anxiety disorder. This study showed that persons with MDD spend significantly more leisure time using the computer compared to controls. Furthermore, persons with dysthymia, panic disorder or agoraphobia spend significantly more daily leisure time hours watching television compared to controls. In chapter 6 was investigated whether physical and social activity were mediating the association between mental disorders and obesity using data from 2,809 persons who participated in the NESDA study. Lower physical activity levels were found in persons with dysthymia and lower levels of social activity were found in persons with MDD, dysthymia and social phobia compared to controls. Both social and physical activities were partially mediating the association between MDD and obesity. This means that at a certain point in time persons with MDD have lower levels of physical and social activity and weigh more than healthy controls. Chapter 8 uses baseline and 2-year follow-up data of 2,447 persons from the NESDA study. The results showed that persons with MDD have an chance of significant weight gain (6 kg or more) over a 2 year period compared to controls, independent of their physical and social activity levels. This means that over time persons with MDD do not gain weight due to decreased levels of social and physical activity.

All together the results of this thesis give evidence for both cross-sectional as well as longitudinal associations between depression, more specific MDD, and obesity. The cross-sectional association is partially mediated by social and physical activity, while the longitudinal association is independent of these lifestyle factors. Panic disorder was associated with significant weight gain over a 2 year period, independent of lifestyle factors. Underweight was both cross-sectionally as well as longitudinally associated with depressive disorders, most specific with dysthymia. These findings suggest that there are some common mental disorders that are at risk for an unhealthy weight status, while others are not. Monitoring the weight as well as developing treatments focusing on both the mental disorder as well as unhealthy weight is suggested for these specific groups.